

REMARKS

Reconsideration is requested.

Claims 8-15 are pending.

The Section 102 rejection and Section 103 rejection of claims 8-15 over Naughton et al (U.S. Patent No. 5,962,325) are traversed. Reconsideration and withdrawal of the rejections are requested in view of the following distinguishing comments.

The claimed invention defines methods of culturing mesenchymal stem cells which includes growing the cells in a serum-free medium. Moreover, the presently claimed invention provides a serum free culture medium for mesenchymal cells. Cultures of cells are not being directly claimed. To the extend the Examiner is construing the claims to serum-free culture medium to include mesenchymal cells, the serum-free culture medium of the claims do not include serum.

There is no disclosure of mesenchymal cells in the disclosure of Naughton, other than the claims, based on a word search of the disclosure available on the PTO web site. Naughton was cited against the applicants parent application (now U.S. Patent No. 6,617,159) where the present Examiner also asserted that methods of culturing chondrocytes and a serum-free culture medium for chondrocytes was separately patentable from methods for culturing mesenchymal cells and a serum-free culture medium for mesenchymal cells. See Office Action dated May 7, 2002.

The claims are submitted to be patentable over the cited art and the Examiner is requested to indicate, with specificity, where the claimed invention is taught by the cited art in the event the claims continue to be rejected over the art of record.

Although using similar cell-types (in particular chondrocytes), the present invention and Naughton et al are aimed at developing optimized culture systems that are totally different: Naughton et al claims the development of a 3-dimensional culture system while the present invention claims the development of a 2-dimensional culture system based on a serum-free culture medium.

With respect to the cell types, the Examiner will note the present invention deals with cells of human origin, in particular mesenchymal cells, while the example of culture given in Naughton et al deals with cells of animal origin, in particular rabbit and cow. In addition, it is known in this art that given one particular cell type, a large variability exists between species in terms of sensitivity and/or response to particular culture conditions that may create variable microenvironments.

In more detail, in Naughton et al, a 3-dimensional culture system is developed, aimed at associating "stromal" cells of various anatomical origin to a 3-dimensional scaffold to create *in vitro* a living tissue possibly transplantable *in vivo*. In this system, TGF-beta is added to promote the proliferation and/or maturation of the cells embedded in the scaffold. Since not specified otherwise, it is assumed that TGF-beta is added to a culture medium containing a certain percentage of serum (called nutrient medium under claim 1).

Most of the claims refer to "a living stromal tissue" that is the final goal of the invention. Moreover, in these claims, most emphasis is given to parameters related to the "non-living," i.e., the biodegradable 3-dimensional framework.

By contrast, the present invention is aimed at providing an optimized culture system, i.e., a culture medium for the expansion of mesenchymal cells in 2-dimensions.

The culture medium is totally devoid of serum but includes only defined growth factors, hormones, vitamins in optimized concentrations. TGF-beta is not included in the defined culture medium.

After expansion in monolayer in the defined culture medium, the mesenchymal cells can be used as cell-based therapy for cartilage repair, either by direct intra-articular injection or in association with biodegradable scaffolds. The substitution of serum by defined factors ensures high reproducibility of the growth of the cultures aimed in therapeutic purposes and prevents a possible contamination of the patients with pathogens potentially present in serum.

The claims are submitted to be patentable over the cited art and withdrawal of the Section 102 and Section 103 rejections of claims 8-15 is requested.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested. The Examiner is requested to contact the undersigned in the event anything further is required.

Respectfully submitted,

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